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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,813	GUMASTE, ASHWIN	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-11 and 13-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-11 and 13-18* is/are rejected.

7)☒ Claim(s) *2,6,9,13 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/9/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The previously indicated allowability of claims 3-6, 10-13 and 20 is withdrawn in view of the newly cited reference(s) to Heller et al (US Patent No. 6138167) and Chittor (US Patent No. 5592610) and in view of informalities in the claims mistakenly overlooked by the examiner in the previous action. Rejections based on the newly cited reference(s) and claim objections follow.

Claim Objections

2. Claims 2, 6, 9, 13 and 17 are objected to because of the following informalities:

Regarding claims 2 and 9, the limitation "second node" on the last line of each claim should be "third node" in order for the claimed node to have proper antecedent basis with respect to the claimed two input and two output port limitations of claims 1 and 8, respectively, from which claims 2 and 9 depend. Claims 1 and 8 recite the second node as comprising two inputs, one coupled to an external sub-network and the other coupled to another node in the sub-network, but claims 2 and 9 currently recite two inputs of the second node being coupled to other ones of nodes in the sub-network.

Regarding claims 6 and 13, the phrase "the output port selected to minimize" should be changed to "the determined output port selected to minimize" to avoid ambiguity for the antecedent basis of "the output port".

Regarding claim 17, the limitation "first node" on line 5 of the claim should be changed to "second node" in order for the limitation to be consistent with the subsequent phrase "to form a fifth unidirectional communication ring with direct communication links from the fourth node to the second node, the second node to the first node, and the first node to the fourth node".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 6-11 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heller et al. ("Heller") (US Patent No. 6138167) in view of Chittor (US Patent No. 5592610).

Regarding claim 1, Heller discloses a sub-network of an optical communication network (col. 1, lines 20-28 and col. 2, lines 49-53), the sub-network comprising: four nodes each having two input ports and two output ports; a first one of the nodes having the input ports and one of the output ports coupled to other ones of the nodes; a second one of the nodes having the output ports and one of the input ports coupled to other ones of the nodes; a third one of the nodes having the output ports and one of the input ports coupled to other ones of the nodes; and a fourth one of the nodes having the input ports and one of the output ports coupled to other ones of the nodes (fig. 11 and col. 12, line 38 to col. 13, line 33) . Heller does not disclose that the other output port of each of the specific first node and fourth node is operable to send signals outside of the sub-network or that the other input port of each of the specific second node and third node is operable to receive signals from outside of the sub-network. However, Heller discloses connecting the four node sub-network to other sub-networks in the communication system, including sub-networks of the same four node structure (col. 14, lines 36-42). Therefore, joining the four node sub-network to other four node sub-networks would have been obvious to one of ordinary skill in the art at the time of the invention (including the case where nodes one and four each have an output port operable to send signals outside of

the sub-network and nodes two and three each have an input port operable to receive signals from outside of the sub-network) in order to enable a greater multiprocessor system of more than four nodes, composed of multiple instances of the four node sub-network structure, to achieve the "good communication metrics" advantage of the four node sub-network structure for the greater multiprocessor system, as taught by Heller (col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42). Heller discloses that the system is a computer system (col. 1, lines 20-28), sending information from source to destination (col. 2, lines 1-28), and sending signals out of a sub-network toward a destination via other sub-networks using a selected output port chosen to minimize the number of intermediate sub-networks between the selected output port and the destination node (col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42), but does not disclose that each of the nodes is operable to: receive a packet comprising a destination address; and route the packet to the destination via the nodes corresponding to the determined output ports. Chittor discloses a multi-processor computer communications network for distributing processing power among the nodes, where communication between nodes occurs by sending control information for a packet to the destination node (the control information inherently requiring a destination address for this to be possible) (col. 1, lines 19-35 and col. 2, lines 11-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the multiprocessor computer system of Heller would communicate packets using destination addresses along the paths between nodes in the computer system, through all determined node input and output ports, since packet-based communication with packet control information in a multiprocessor computer system is conventional, as taught by Chittor.

Regarding claim 2, the combination of Heller and Chittor discloses the sub-network of claim 1, wherein: one of the output ports of the first node couples to one of the input ports of the fourth node; one of the output ports of the second node couples to one of the input ports of the first node and the other of the output ports of the second node couples to one of the input ports of the fourth node; one of the output ports of the third node couples to one of the input ports of the first node and the other of the output ports of the third node couples to one of the input ports of the second node; and one of the output ports of the fourth node couples to one of the input ports of the third node (Heller: fig. 11 and col. 12, line 38 to col. 13, line 33).

Regarding claims 3 and 4, the combination of Heller and Chittor discloses the sub-network of claim 1, wherein one of the output ports of the first node couples to a second sub-network and one of the input ports of the second node couples to the second sub-network, and the other output port of the fourth node of the sub-network couples to the other input port of the second node of the second sub-network; and the other output port of the first node of the second sub-network couples to the other input port of the third node of the sub-network; the second sub-network being another four node sub-network with the same structure, as described above for claim 1.

Regarding claim 6, the combination of Heller and Chittor discloses the sub-network of claim 1, wherein each of the nodes is further operable to determine the output port based on the total number of sub-networks forming a communication network, the determined output port selected to minimize the number of intermediate sub-networks to reach the destination address (Heller: col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42).

Regarding claim 7, the combination of Heller and Chittor discloses the sub-network of claim 1, wherein each of the nodes further comprises an add/drop module operable to: couple to

add/drop lines; route communications from the input ports of the node to an add/drop line; and route communications from an add/drop line to the output ports of the node (Heller: fig. 11, element Processing Node 111(0) and col. 12, line 38 to col. 13, line 7, where the communication lines connecting the memory and processor to the switch are add/drop lines).

Regarding claim 8, Heller discloses a communication network comprising a plurality of sub-networks (col. 1, lines 20-28 and col. 2, lines 49-53), each sub-network comprising: four nodes each having two input ports and two output ports; a first one of the nodes having the input ports and one of the output ports coupled to other ones of the nodes; a second one of the nodes having the output ports and one of the input ports coupled to other ones of the nodes; a third one of the nodes having the output ports and one of the input ports coupled to other ones of the nodes; and a fourth one of the nodes having the input ports and one of the output ports coupled to other ones of the nodes (fig. 11 and col. 12, line 38 to col. 13, line 33) . Heller does not disclose that the other output port of each of the specific first node and fourth node is operable to send signals outside of the sub-network or that the other input port of each of the specific second node and third node is operable to receive signals from outside of the sub-network. However, joining the four node sub-network to other four node sub-networks would have been obvious to one of ordinary skill in the art at the time of the invention (including the case where nodes one and four each have an output port operable to send signals outside of the sub-network and nodes two and three each have an input port operable to receive signals from outside of the sub-network), as described above for claim 1. Heller does not disclose that each of the nodes is operable to: receive a packet comprising a destination address; and route the packet to the nodes corresponding to the determined output ports. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Chittor with Heller, as described above for claim 1.

Regarding claim 9, the combination of Heller and Chittor discloses the network of claim 8, wherein, within each sub-network: one of the output ports of the first node couples to one of the input ports of the fourth node; one of the output ports of the second node couples to one of the input ports of the first node and the other of the output ports of the second node couples to one of the input ports of the fourth node; one of the output ports of the third node couples to one of the input ports of the first node and the other of the output ports of the third node couples to one of the input ports of the second node; and one of the output ports of the fourth node couples to one of the input ports of the third node (Heller: fig. 11 and col. 12, line 38 to col. 13, line 33).

Regarding claims 10 and 11, the combination of Heller and Chittor discloses the network of claim 8, wherein, within each sub-network: the other output port of the first node couples to the other input port of the third node of a first other one of the sub-networks; and the other output port of the fourth node couples to the other input port of the second node of a second other one of the sub-networks; and wherein the other input port of the second node couples to the other output port of the fourth node of the first other sub-network; and the other input port of the third node couples to the other input port of the first node of the second other sub-network, the first and second other sub-networks being other connected four node sub-networks with the same structure, the sub-networks being within and making up the computer system, as described above for claim 1.

Regarding claim 13, the combination of Heller and Chittor discloses the network of claim 8, wherein each of the nodes is further operable to determine the output port based on the total number of sub-networks forming the communication network, the determined output port selected to minimize the number of intermediate sub-networks to reach the destination address (Heller: col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42).

Regarding claim 14, the combination of Heller and Chittor discloses the network of claim 8, wherein, within each sub-network, each of the nodes further comprises an add/drop module operable to: couple to add/drop lines; route communications from the input ports of the node to an add/drop line; and route communications from an add/drop line to the output ports of the node (Heller: fig. 11, element Processing Node 111(0) and col. 12, line 38 to col. 13, line 7, where the communication lines connecting the memory and processor to the switch are add/drop lines).

Regarding claims 15, 16 and 18, Heller discloses a sub-network of an optical communication network (col. 1, lines 20-28 and col. 2, lines 49-53), the sub-network comprising: a first node, a second node, a third node, and a fourth node interconnected to form a first unidirectional communication ring with direct communications links from the fourth node to the third node, the third node to the second node, the second node to the first node, and the first node to the fourth node; the second node further connected to the fourth node to form a second unidirectional communication ring with direct communications links from the second node to the fourth node, the fourth node to the third node, and the third node to the second node; and the third node further connected to the first node to form a third unidirectional communication ring with direct communications links from the third node to the first node, the first node to the fourth node, and the fourth node to the third node (fig. 11 and col. 12, line 38 to col. 13, line 33). Heller does not disclose that an output port of the first node couples to an input port of a node in a second sub-network; an input port of the second node couples to an output port of a node in the second sub-network an input port of the third node couples to an output port of a node in a third sub-network; and an output port of the fourth node couples to an input port of a node in the third sub-network. However, Heller discloses connecting the four node sub-network to other sub-networks in the communication system, including sub-networks of the same four node

structure (col. 14, lines 36-42). Therefore, joining the four node sub-network to other four node sub-networks would have been obvious to one of ordinary skill in the art at the time of the invention (including the case where an output port of the first node couples to an input port of a node in a second sub-network, an input port of the second node couples to an output port of a node in the second sub-network an input port of the third node couples to an output port of a node in a third sub-network, and an output port of the fourth node couples to an input port of a node in the third sub-network), in order to enable a greater multiprocessor system of more than four nodes, composed of multiple instances of the four node sub-network structure, to achieve the "good communication metrics" advantage of the four node sub-network structure for the greater multiprocessor system, as taught by Heller (col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42). Heller discloses that the system is a computer system (col. 1, lines 20-28), sending information from source to destination (col. 2, lines 1-28), and sending signals out of a sub-network toward a destination via other sub-networks using a selected output port chosen to minimize the number of intermediate sub-networks between the selected output port and the destination node (col. 2, lines 1-28 and lines 49-53, col. 3, line 58 to col. 4, line 7, col. 12, lines 49-61, col. 13, lines 22-33 and col. 14, lines 36-42), but does not disclose that each of the nodes is operable to: receive a packet comprising a destination address; and route the packet to the destination via the nodes corresponding to the determined output ports. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Chittor with Heller as described above for claim 1.

Regarding claim 17, the combination of Heller and Chittor discloses the sub-network of claim 15, wherein: the first node is further connected to the third node to form a fourth unidirectional communication ring with direct communications links from the first node to the

third node, the third node to the second node, and the second node to the first node; and the fourth node is further connected to the second node to form a fifth unidirectional communication ring with direct communications links from the fourth node to the second node, the second node to the first node, and the first node to the fourth node (Heller: fig. 11 and col. 12, line 38 to col. 13, line 33).

Response to Arguments

5. Applicant's arguments with respect to claims 1-4, 6-11 and 13-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

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